Streak Camera characterization using a femtosecond Ti:S laser.

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Abstract

At ELETTRA a Streak Camera system is in operation since 1999. Several measurements have been performed so far on the Storage Ring beam using as a Synchrotron Radiation source the diagnostic bending magnet beam line. This instrument has been also widely used during the Storage Ring FEL commissioning to fully characterize both the electron beam and the FEL radiation down to 190nm and σ=3.2ps. Recently, a femtosecond Ti:Sapphire laser delivering sub-50fs pulses and an autocorrelator system became available. Therefore we took the opportunity to fully characterize the Streak Camera using this ultra short pulse source. By frequency conversion to the blue and UV we study the effects of incident light wavelength and bandwidth on the resolution, as well as the linearity of the sweeps) linear single sweep and double sweep with synchroscan) on full-scale extension. The results are presented in this paper, together with development plan for sub-picosecond Streak Camera triggering and synchronization to a femtosecond laser.